

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1857

Konkoly Observatory
Budapest
1980 October 20
HU ISSN 0374-0676

THE PERIOD OF V154 IN NGC 5272 (M3)

The variability of the star was discovered visually by Barnard (1906). Greenstein (1935), Arp (1955) and Kholopov (1972) published photographic observations of the star. A radial velocity curve was published by Joy (1940). These authors concluded that V 154 is a W Vir star, changing its light between $12^m.1 - 13^m.7$ in B and $12^m.0 - 13^m.25$ in V. The spectral type varies between F5 and G3.

Between spring 1976 and spring 1979 we took 25 Kodak 103a-D plates of NGC 5272 with the 314/5000 mm two lens refractor of the Wilhelm Foerster Observatory, Berlin. The plates were exposed 10 to 30 minutes behind a Schott GG495 filter. As the variable is located near the center of the cluster, it was not possible to measure the star with an iris photometer. Therefore, the star was estimated by the Argelander step method using seven comparison stars. The resulting magnitudes have an accuracy of about $0^m.05$.

With the period value $P=15^d.2854$ we reduce the observations to one period and determined from the resulting light curve an actual time of maximum by the Pogson method. This value is listed in Table I together with the values derived by the above cited authors. The epochs and O-C values were calculated with Arp's elements

$$\text{Max.} = 2424627^d.55 + 15^d.2854 \cdot E \quad (1)$$

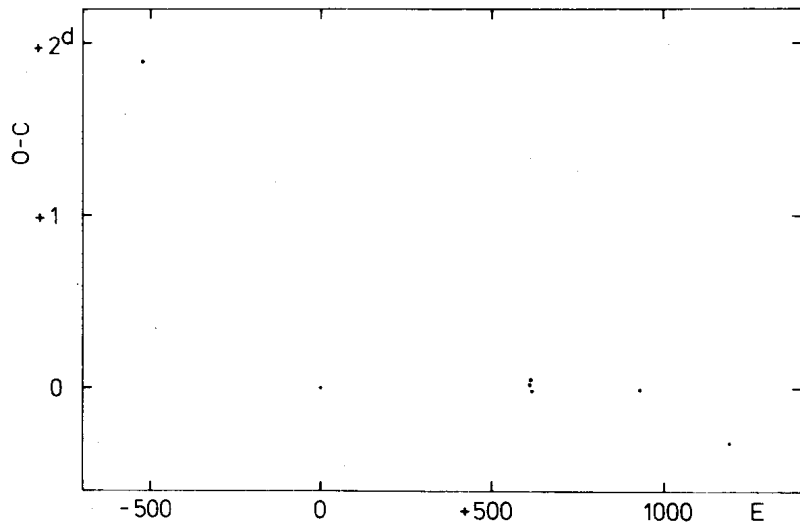
and are shown in the Figure. Formula (1) represents the values of Greenstein, Arp and Kholopov. Our new observations indicate a period change because the O-C is significantly greater than the error of our maximum timing. If one makes a linear fit between the value of Kholopov, one can derive a first approach to the new period value. We find an actual value of $P_a=15^d.2842$ which means that the period has shortened by approximately $1^m.45^s$. The value $\Delta P/P$ is $-7.8 \cdot 10^{-5}$. Another period change is indicated by

the large O-C value of Barnard's observations.

Table I

Observed times of maxima of V 154 in NGC 5272

Maximum (J.D.)	E	O-C	Reference
24 16604. ^d ₆	-525	+1. ^d ₈₉	Barnard (1905)
24627.55	0	0.00	Greenstein (1935)
34119.8 ± 0. ^d ₁₅	+621	+0.02	Arp (1955)
34150.4	623	+0.05	"
34180.9	625	-0.02	"
38873.53	932	-0.01	Kholopov (1972)
42862.71 ± 0.08	1193	-0.32	this paper.



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 Kholopov, P.N., 1972: *Astron. Cirk.* 676, 7